Amendments to the Claims

1   1. (currently amended) A method for estimating a channel impulse response

2   in an ultra wide bandwidth (UWB) system comprising the steps of:

3   ~~transmitting and receiving in parallel via a channel a plurality of~~

4   ~~training sequences, each training sequence being different, each training~~

5   ~~sequence being modulated at a chip rate, and each training sequence~~

6   ~~consisting of ultra wide bandwith radio pulses;~~

7   ~~sampling each training sequence in parallel with multiple correlators~~

8   ~~at sampling rate substantially slower than the chip rate to obtain a plurality~~

9   ~~of samples for each training sequence, in which the samples span a time~~

10   ~~interval corresponding to an impulse response of the channel; and~~

11   <u>generating a training sequence;</u>

12   <u>modulating the training sequence at a chip rate to produce a</u>

13   <u>modulated training sequence, the modulated training sequence being</u>

14   <u>comprised of ultra wide bandwith radio pulses;</u>

15   <u>generating a training signal comprised of a plurality of repetitions of</u>

16   <u>the modulated training sequence;</u>

17   <u>transmitting and receiving, via a channel, the training signal;</u>

18   <u>sampling the received training signal, in parallel, with a set of</u>

19   <u>correlators to obtain a plurality of samples, in which each correlator samples</u>

20   <u>the received training signal at a sampling rate substantially slower than the</u>

21   <u>chip rate, each correlator samples the received training signal at a different</u>

22   <u>delay for each repetition of the modulated training sequence in the received</u>

23   <u>training signal, and such that the plurality of samples spans a time interval</u>

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24   <u>corresponding to an impulse response of the channel at a resolution</u>

25   <u>substantially equal to the chip rate; and</u>

26   estimating the impulse response of the channel over the time interval

27   corresponding to the impulse response of the channel from the plurality of

28   samples ~~of the plurality of training sequences at a resolution substantially~~

29   ~~equal to the chip rate~~.

1   2. (currently amended) The method of claim 1, in which ~~each training~~

2   ~~sequence is passed through *n* correlators to generate *n* samples for each~~

3   ~~correlator~~ <u>the training signal comprises *m* repetitions of the modulated</u>

4   <u>training sequence, and further comprising:</u>

5   <u>sampling, in each of *n* correlators, the training signal *k* times per</u>

6   <u>repetition of the modulated training sequence in the received training signal</u>

7   <u>to produce $m \times n \times k$ samples of the received training signal.</u>

1   3. (original) The method of claim 1, in which the sampling rate is at least ten

2   times slower than the chip rate.

1   4. (currently amended) The method of claim 1, in which the sampling rate is

2   equal to a symbol rate <u>of the training sequence</u>.

1   5. (previously presented) The method of claim 1, further comprising:

2   estimating equalizer coefficients from an equalizer training sequence

3   consisting of radio pulses.

1   6. (currently amended) The method of claim 1, further comprising:

2   estimating weights for the corresponding correlators to acquire most

3   of the available energy of a data signal received via the ~~estimated~~ channel, in

4   which the data signal consists ~~of the ultra~~ of ultra wide bandwith radio

5   pulses.

1   7. (currently amended) The method of claim 1, in which a first subset of the

2   <u>plurality of</u> samples are used for a rough estimate <u>of the impulse response of</u>

3   <u>the channel,</u> and a second subset of the <u>plurality of</u> samples are used for an

4   accurate estimate <u>of the impulse response of the channel</u> based on the rough

5   estimate.

1   8. (currently amended) The method of claim 1, in which the estimate <u>of the</u>

2   <u>impulse response of the channel</u> is based on a previous estimate of the

3   ~~channel impulse response~~ <u>impulse response of the channel</u>.

1   9. (currently amended) The method of ~~claim 1~~ <u>claim 2</u>, where k is greater

2   than one.

1   10. (currently amended) The method of ~~claim 1~~ <u>claim 3</u>, in which the chip

2   rate is ~~chip rate~~ on the order of 10 GHz.

1   11. (currently amended) The method of claim 7, in which the second subset

2   of <u>the plurality of</u> samples are obtained from training sequences received

3   after obtaining the first subset of <u>the plurality of</u> samples.

12. (new) The method of claim 2, where k is equal to one.